BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Brookfield

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is <u>not</u> intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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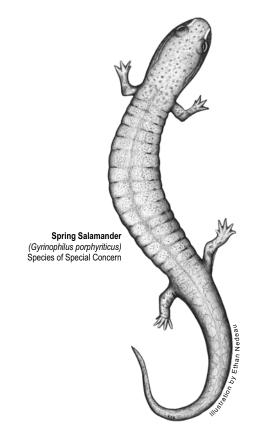
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* Depending on the location of Core Habitats, your city or town may not have all of these sections.



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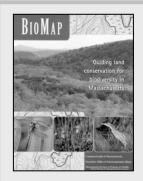
Introduction

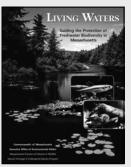
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, BioMap and Living Waters. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate Core *Habitats* that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the BioMap and Living Waters reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the *riparian areas*, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as Supporting Natural *Landscape* provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the <u>entire</u> Core Habitat, not just the portion that falls within your city or town. For a list of <u>all</u> the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at <u>www.nhesp.org</u>.

The list of species and communities within a Core Habitat contains <u>only</u> the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
	Species and Verified Natural Community Types	
Biodiversity Group	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
	Species	
Biodiversity Group	Included in Living Waters	Total Statewide
Aquatic		
Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- *Threatened* species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The *Massachusetts Natural Heritage Atlas* shows Priority Habitats, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and Estimated Habitats, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- *Imperiled* communities typically have 6-20 sites or few remaining acres in the state.
- *Vulnerable* communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



Massachusetts Division of Fisheries and Wildlife

Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive

Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - Field guides
 - * Natural Heritage Atlas, and more!



Massachusetts Division of Fisheries and Wildlife

Brookfield

Core Habitat BM898

Natural Communities

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Acidic Graminoid Fen Vulnerable

Acidic Shrub Fen Vulnerable

Deep Emergent Marsh Secure

Inland Acidic Pondshore/Lakeshore Secure

Red Maple Swamp Secure

Shrub Swamp Secure

Plants

Common Name Scientific Name Status

Long's Bulrush Scirpus Iongii Threatened

Variable Sedge Carex polymorpha Endangered

Vertebrates

Common Name Scientific Name Status

American Bittern Botaurus Ientiginosus Endangered

Four-toed Salamander Hemidactylium scutatum Special Concern

Least Bittern Ixobrychus exilis Endangered

Pied-Billed Grebe Podilymbus podiceps Endangered

Spotted Turtle Clemmys guttata Special Concern

Core Habitat BM902

Natural Communities

Common Name Scientific Name Status

Hickory - Hop Hornbeam Imperiled

Forest/Woodland



Brookfield

Core Habitat BM912

Plants

Common Name Scientific Name Status

Small Site for Rare Plant

Core Habitat BM920

Natural Communities

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Deep Emergent Marsh Secure

Plants

Common Name Scientific Name Status

Long's Bulrush Scirpus longii Threatened

Vertebrates

Common Name Scientific Name Status

American Bittern Botaurus lentiginosus Endangered

King Rail Rallus elegans Threatened

Pied-Billed Grebe Podilymbus podiceps Endangered

Core Habitat BM923

Plants

Common Name Scientific Name Status

Small Site for Rare Plant

Core Habitat BM928

Plants

Common Name Scientific Name Status

Small Site for Rare Plant



Brookfield

Core Habitat BM930

Plants

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Small Site for Rare Plant

Core Habitat BM963

Natural Communities

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Hemlock-Hardwood Swamp Secure

Mud Flat Secure

Oak - Hemlock - White Pine Forest Secure

Shallow Emergent Marsh Secure

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Four-toed Salamander Hemidactylium scutatum Special Concern

Marbled Salamander Ambystoma opacum Threatened

Core Habitat BM968

Plants

Common Name Scientific Name Status

Small Site for Rare Plant

Core Habitat BM983

Natural Communities

Common Name Scientific Name Status

Kettlehole Level Bog Imperiled



Brookfield

Core Habitat BM984

Natural Communities

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Kettlehole Level Bog Imperiled

BioMap: Core Habitat Summaries

Brookfield

Core Habitat BM898

This Core Habitat contains outstanding emergent marshes along an extensive area of the Quaboag River, as well as forested wetlands, shrub wetlands, and upland forests along its tributaries. This Core Habitat is critical for rare plants, most notably the globally rare Long's Bulrush. It is also important for rare wetland birds with probably the largest concentration of breeding American Bitterns in the state. The majority of this area is protected within the Quaboag Wildlife Management Area.

Natural Communities

This Core Habitat contains a mosaic of high-quality, species-rich, wetland communities along an extensive area of the Quaboag River. A Deep Emergent Marsh of exemplary species diversity, size, and quality occupies much of the Quaboag's broad shores. Deep Emergent Marshes are graminoid wetlands occurring on saturated soils that are seasonally flooded. They generally form in broad, flat areas bordering slow rivers or along pond margins, and often grade into Shrub Swamps. Also in this Core Habitat is a large and pristine Acidic Graminoid Fen that is well-buffered by the marsh and forested swamps. Acidic Graminoid Fens are sedge and Sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season. The Acidic Graminoid Fen here is considered by some experts to be of world class.

Plants

This Core Habitat is quite important for rare plant conservation. The marsh contains a very large population of the globally rare Long's Bulrush, which here emerges from shallow water. Upland areas surrounding the marsh support several populations of the Variable Sedge, which is Endangered in Massachusetts.

Vertebrates

Shallow and deep freshwater marshes along the Quaboag River support what may be the largest concentration of breeding American Bitterns in the state. They also provide important breeding, feeding, and migration habitat for Least Bitterns, Pied-billed Grebes, and other marsh birds. Small wetlands and vernal pools in this Core Habitat, especially those with abundant sphagnum moss, support populations of Four-toed Salamanders. Shallow wetlands adjacent to forested uplands and vernal pools also provide significant habitat for Spotted Turtles.

Core Habitat BM902

Natural Communities

This Core Habitat contains a large and mature Hickory-Hop Hornbeam Forest that is rich in species diversity and displays old-growth properties. Hickory-Hop Hornbeam Forests are open, mixed hardwood forests dominated by various Hickory species and with significant Hop Hornbeam in the subcanopy. This community type is characterized by a sparse shrub layer, and a rich diversity of herbaceous flora. Here the high-quality community is partially buffered by naturally vegetated land, with agricultural land to the east.



BioMap: Core Habitat Summaries

Brookfield

Core Habitat BM920

Natural Communities

This Core Habitat contains a large, beautiful, and very diverse Deep Emergent Marsh free from human disturbances or invasive exotic species. Deep Emergent Marshes are graminoid wetlands occurring on saturated soils that are seasonally flooded. They generally form in broad, flat areas bordering slow rivers or along pond margins, and often grade into Shrub Swamps.

Plants

Growing within a deep emergent marsh is a healthy population of the globally rare Long's Bulrush.

Vertebrates

This Core Habitat encompasses habitat for marsh birds along the Brookfield River in East Brookfield. Shallow and deep freshwater marshes provide breeding, feeding, and migration habitat for American Bitterns, King Rails, and Pied-billed Grebes. This area is partially protected as conservation land.

Core Habitat BM963

This Core Habitat encompasses the areas around Wolf Swamp, Cranberry Pond, and over two miles of Trout Brook and its tributaries in Brookfield. A diversity of high-quality natural communities provide habitat for plants and animals, including rare salamanders. Over half the area is already protected as conservation land.

Natural Communities

This Core Habitat contains a large and diverse Hemlock-Hardwood Swamp. Hemlock-Hardwood Swamps are acidic forested swamps that have Hemlock as the dominant canopy species. These forested wetlands occur on saturated soils in poorly drained basins throughout the central and western portions of the state. Here the swamp is embedded within an extensive, maturing Oak-Hemlock-White Pine Forest, which itself has excellent habitat diversity, including drainages, small ravines, and vernal pools.

Vertebrates

This area includes red maple swamps and other riparian wetlands interspersed with wooded ridges. The Core Habitat contains significant, connected habitat for Four-toed Salamanders, especially in Wolf Swamp and in small forested wetlands along Trout Brook. Marbled Salamanders, which have been documented in the area, may occur here as well, especially where vernal pools are present in rocky, deciduous, forested uplands.

Core Habitat BM983

Natural Communities

This Core Habitat contains part of a well-developed floating bog mat ringing a flooded kettlehole pond that is moderately buffered by forested upland.



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BioMap: Core Habitat Summaries

Brookfield

Core Habitat BM984

Natural Communities

This Core Habitat contains most of the ring of a well-developed floating bog on a flooded kettlehole pond that is moderately buffered by forested upland.

Living Waters: Species and Habitats

Brookfield

Core Habitat LW273

Plants

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Vasey's Pondweed Potamogeton vaseyi Endangered

Living Waters: Core Habitat Summaries

Brookfield

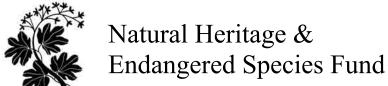
Core Habitat LW273

One of very few occurrences of the Endangered Vasey's Pondweed in Massachusetts is in Quaboag River as it flows into Quaboag Pond. Native freshwater plants like Vasey's Pondweed are an important component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates, and adding oxygen to the water through photosynthesis.



Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the



To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.